

Amendments to the Drawings:

The attached sheet of drawings includes a proposed new figure, Fig. 3. This sheet, which includes Fig. 2A and Fig. 2B, replaces the original sheet including Fig. 2A and Fig. 2B. As an entire figure has been added, and there are no changes to previously presented figures, the proposed changes are readily identifiable without an annotated sheet showing changes. As such, an annotated sheet has not been provided.

Attachment: Replacement Sheet

Remarks/Arguments:

The Specification and Drawing Amendments Add No New Matter

In the specification, the paragraphs [0026.1] and [0031.1] have been added to provide text referring to the newly added figure, Fig. 3. The added text, as well as the elements shown in figure 3 are referred to in the text of the application as originally filed, and no new matter was added.

More particularly, paragraph [0021] of the application as filed recites: "This apparatus has special applications in the cockpit of an aircraft where the pilot is wearing infra-red light filtering goggles and needs to see outside the aircraft as well as read the instruments. The color of the light emitting diodes may be switched from red, to green to blue, depending upon the type of goggles the pilot is wearing." Additionally, paragraph [0012] recites: "Assume for example that a pilot is wearing Type 1, Class A NVIS goggles, which are used for detecting infra red images in a limited-light or dark scenario. Now suppose internally reflected light or instrument panels of the aircraft comes within the field of view of the night vision goggles. If the displays are back lit with Class B filtered light, as is typically done for multicolor displays, then red light emissions at 665 nm wavelength emitted by the Class B displays will reduce the gain of the night vision goggles for a pilot wearing Type 1, Class A night vision goggles. The pilot's ability to use his Class A goggles to detect external IR images will be seriously impaired." Additionally, claim 15 as originally filed recited: "A method for illuminating a liquid crystal display in an aircraft cockpit for viewing by a pilot wearing infrared goggles, said method comprising: a. activating an array of light emitting diodes adjacent light pipes disposed alongside said liquid crystal display; b. filtering infra-red light emitted by said array of light emitting diodes; and, c. switching colors of said light emitting diodes as required by a pilot of the aircraft." From the foregoing it can be seen that the added text is fully supported by the application as filed and adds no new matter.

Moreover, people operating vehicles while wearing night vision goggles, in particular pilots in cockpits including instruments, with the pilots wearing infrared goggles, are well known. This coupled with the fact that the elements depicted in figure 3 are all referred to in the application as filed make it clear that figure 3 adds no new matter.

The Claim Rejections Should be Withdrawn

Claims 7-8, 15-16, 21-25 and 28 remain in this application. Claims 7-8, 15-16, 22-23, 25, and 28 were amended herein. Claims 26 and 27 were cancelled as their recitations were incorporated into claim 16. Claims 29-34 were added, but add no new matter as they are fully supported by the application as filed.

Claims 15-16 and 24-28 were rejected under 35 USC 102(e) as being anticipated by Mosier (US6574030). In response, the applicant has amended claim 15 to more clearly distinguish the claimed subject matter from Mosier.

Claim 15 as amended herein recites in part: "d. selectively switching on a first group of like colored light emitting diodes in the array but not all the light emitting diodes in the array if the person is wearing NVIS-A night vision goggles and selectively switching on a second group of like colored light emitting diodes in the array or switching on all the light emitting diodes in the array if the person is wearing NVIS-B night vision goggles." The amended claim is not anticipated by Mosier for at least two reasons. The first is that Mosier does not teach or suggest a method for illuminating a liquid crystal display that involves switching on different groups of light emitting diodes. Instead, Mosier teaches the use of one set of LEDs that is used for both daytime and NVIS modes [Mosier, Col. 5, Lines 19-23]. Secondly, Mosier does not teach or suggest a method of illuminating a liquid crystal display where the method differs depending on whether the person is wearing NVIS-A or NVIS-B night vision goggles. As such, Mosier does not anticipate claim 15 or any claim dependent on claim 15.

As amended, claim 16 recites in part: "switching on a first group of like colored light emitting diodes consists essentially of switching on only green light emitting diodes or only blue light emitting diodes." The Office Action asserted that the recitations of claim 16, prior to being amended herein, were disclosed in Col. 5, lines 25-28 of Mosier. However, those lines of Mosier discuss the use of a color or NVIS filter, and the desirability of having a single light source bright enough for both daytime and NVIS modes. It does not discuss switching LEDs on and off when switching between NVIS and daylight modes. Thus, Mosier does not teach or suggest a

method of illuminating a liquid crystal display where only blue or green LEDs are switched on if a person is wearing NVIS-A goggles. As such, Mosier does not anticipate claim 16.

Claim 24 recites in part: "the filtering step further comprises letting a small amount of red light through." Although Mosier discusses the use of an NVIS filter or a color filter, it does not teach or suggest a filtering step where infra-red light is filtered, but a small amount of red light is let through. More particularly, Mosier's discussion of an NVIS filter does not suggest that infra-red, but not all red light is filtered. Similarly, the discussion of use of a color filter not teach or suggest filtering infra-red light but not all red light. As such, Mosier does not anticipate claim 24.

Claim 25 recites in part: "in the selectively switching step, if NVIS-B goggles are worn by the person, all the light emitting diodes in the array are switched on." Mosier does not teach or suggest a method in which less than all the light emitting diodes are switched on if NVIS-A goggles are worn, and all the light emitting diodes are switched on if NVIS-B goggles are worn. As such, Mosier does not anticipate claim 25.

Claim 28 as amended herein recites in part: "a filter disposed between the light emitting diode array and the sheet of light pipes for filtering out infra-red light from the light emitting diodes." Mosier does not teach or suggest positioning a filter so that it is disposed between the LED array and the sheet of light pipes. Instead, Mosier positions its filter to the side of both the LED array and its light guide. This can be seen by referring to figure 2 of Mosier. As shown in figure 2, the filter of Mosier would have to be positioned above the LED array (and the LED array reoriented) for the filter to be disposed between the LED array and the light guide. As the filter of Mosier is not disposed as claimed, Mosier does not anticipate claim 28 or any claim dependent on claim 28.

It is probably worth noting that Lippman does not teach or suggest such a disposition of filters either. In Lippman, the filters 20 cover the liquid crystal cell 10, and cover areas defined by the appliqué 12 [Lippman, Col. 4, Lines 38-45]. As such, the filters 20 of Lippman are not disposed between a light emitting diode array and a sheet of light pipes.

Newly added claim 29 recites in part: "the light emitting diode array comprises red light emitting diodes and non-red light emitting diodes, and the apparatus further comprises a switch for addressing only the red light emitting diodes of the light emitting diode array." As has been noted already, Mosier does not teach or suggest switching of subsets of LEDs. As such it has no reason to, and in fact does not, teach or suggest a switch for addressing only the red LEDs of the LED array, and does not anticipate claim 29 or any claim dependent on claim 29.

Newly added claim 30 recites in part: " the light emitting diode array comprises blue and green light emitting diodes, and the apparatus further comprises a switch for addressing only the blue light emitting diodes and a switch for addressing only the green light emitting diodes." As with claim 29, Mosier does not teach or suggest a switch for addressing only the blue LEDs of the LED array or only the green LEDs of the LED array, and thus does not anticipate claim 30 which requires both a switch for blue LEDs and a switch for green LEDs. As Mosier does not anticipate claim 30, it does not anticipate any claim dependent on claim 30.

Newly added claim 31 recites in part: " the apparatus further comprises a fluorescent light source positioned to transmit light through the sheet of light pipes, the fluorescent light source being oriented to emit light into the sheet through a side of the sheet other than a side of the sheet into which the array of light emitting diodes emits light." The apparatus of Mosier utilizes the same light source for both daylight and NVIS modes, and teaches away from the use of multiple light sources. Moreover, even if it did teach or suggest the use of multiple light sources, it does not teach or suggest positioning and orienting a fluorescent light source such that it emits light into a sheet of light pipes via a different side than that used by an LED array. As such, Mosier does not anticipate claim 31 or any claim dependent on claim 31.

Newly added claim 32 recites in part: "the apparatus comprises at least two light emitting diode arrays, each diode array having a plurality of different groups of like colored light emitting diodes disposed to back-light the liquid crystal display, wherein the at least two diode arrays are positioned adjacent to different sides of the sheet of light pipes." Mosier does not teach or suggest the use of two LED arrays and a fluorescent light source positioned adjacent to, or to

emit light into, different sides of a sheet of light pipes. As such, Mosier does not anticipate claim 32.

Claims 7 and 8 were rejected under 35 USC 103(a) as being unpatentable over Lippmann (US5695269) if Lippman were modified to include an infra-red filter. The applicant disagrees as, even if modified as suggested, Lippman does not teach, suggest, or motivate all the recitations of any of the claims, and there is no reason to modify Lippman as proposed in the Office Action..

Claim 7 recites in part: "filters disposed between each of the arrays and the light pipes for filtering out infra-red light from the light emitting diodes.". The Office Action asserts that this recitation is satisfied by the filters 20 of Lippman. However, the filters 20 cover the liquid crystal cell 10, and cover areas defined by the appliqué 12 [Lippman, Col. 4, Lines 38-45]. As such, the filters 20 of Lippman are not disposed between a light emitting diode array and a sheet of light pipes but instead are located on a surface of the liquid crystal cell 10 opposite that of the light pipe 22. Moreover, Mosier does not teach, suggest, or motivate disposing filters as claimed (see the discussion in regard to claim 28). Since none of the cited references taken individually or in combination teach, suggest, or motivate all of the recitations of claim 7, claim 7 is patentable over the cited references.

The Office Action acknowledges that Lippman does not disclose an infra-red filter, but asserts that this inadequacy is overcome by the fact that it would have been obvious to replace the red filter of Lippman with an infrared filter because "changing red filter to infrared filter will block any heat that has been generated by light in order to keep the apparatus cool." The applicant respectfully disagrees. First, an infra-red filter absorbs infra-red light, and the infra-red filter would be part of the apparatus. Thus, the use of an infra-red filter would retain energy in the apparatus instead of allowing it to exit the apparatus in the form of infra-red light. As such, the reason for including an infra-red filter as asserted by the Office Action is in fact not a reason to include such a filter, and there is no expectation of advantage provided by the Office Action that supports the proposed change. Moreover, changing the filters 20 from red filters to infra-red filters would render Lippman unsuitable for its intended purpose as replacing the filters 20 with

filter that filter non-visible light rather than visible light would prevent the filter from providing the visible warning effect that a visible light filter would provide. As such, claim 7 is patentable over Lippman.

The Office Action asserts that *In re Mason* (114 USPQ 127) held that the functional "whereby" statement does not define any structure and accordingly cannot serve to distinguish. Although that assertion is no longer relevant in light of the deletion of the whereby clause from claim 7, the applicant would like to clarify that whereby clauses are not *per se* unable to be used to distinguish a claim from the prior art. *In re Mason* does not include any holdings regarding whereby statements, and definitely does not include any holding regarding the whereby statement of claim 7. It does however hold that functional language which does not define any structure cannot serve to distinguish non-process claims. This holding seems consistent with subsequent decisions which held that functional language is not *per se* non-limiting [*In re Swineheart*, 439 F. 2d 210, 169 USPQ 226 (1971); *In re Schreiber*, 128 F. 2d 1473, 1478, 44 USPQ 2d 1429, 1432 (1997)]. As such, the question to be asked is whether the functional language of the whereby clause defines any structure which serves to distinguish claim 7 from the cited references.

The language of the whereby clause previously found in claim 7 did in fact define structure. The statement recites: "whereby the lighting apparatus is switchable for use with NVIS-A and NVIS-B night vision goggles" An apparatus cannot be switchable unless it includes a switch or switching means. As described in the specification, an apparatus cannot be used with NVIS-A night vision goggles if it emits red or infra-red light, and cannot be used with NVIS-B night vision goggles if it emits infra-red light or does not emit at least some red light. As such, the statement that the apparatus is switchable for use indicates that it has switching means that switch the apparatus between a mode in which it does not emit red light and does not emit infra-red light and a mode in which it does not emit infra-red light but does emit-red light.

Both prior to amendment, and as currently amended, claim 8 was and is patentable at least because of its dependence on claim 7. Moreover, as amended herein, claim 8 recites in part: "wherein each light emitting diode array includes different groups of like colored diodes, each

group emitting only red green or blue light, and each group emitting a different colored light than any other of the different groups of the light emitting diode array". As claim 7 recites "a pair of light emitting diode arrays", before it can render claim 8 unpatentable, Lippman must teach, suggest, or motivate a pair of arrays, each array having different groups of LEDs emitting different colors. In Lippman, the LEDs 28 all emit a first color, and the LED 36 emits a second color [Lippman, Col. 3, Lines 49-63; Col. 4, Line 64-Col. 5 Line 7]. There is only one LED 36. Thus, Lippman does not teach, suggest, or motivate a pair of LED arrays, each array including groups that emit a different color than other groups in the array. As such, claim 8 is patentable over Lippmann as Lippman does not teach, suggest, or motivate all the recitations of claim 8.

Newly added claim 33 recites in part: "a switch coupled to the light emitting diode arrays in such a manner that operating the switch causes red light emitting diodes of the light emitting diode arrays to switch on or off but does not cause blue or green light emitting diodes of the light emitting diode arrays to switch on or off." Lippman does not teach, suggest, or motivate a pair of arrays, each pair including red light emitting diodes, and does not teach, suggest, or motivate a switch that causes red diodes in both arrays to switch on or off. As previously discussed, Lippman includes only a single red diode 36. As such, claim 33 is patentable over Lippman both because of its dependence on claim 7 and because of the recitations of claim 33.

Newly added claim 34 recites in part: "the light pipes are part of a sheet of light pipes, and the apparatus further comprises a fluorescent light source positioned to transmit light through the sheet of light pipes, the fluorescent light source being positioned and oriented to emit light into the sheet through a side of the sheet other than the sides of the sheet into which the arrays of light emitting diodes emits light. None of the cited references teach, suggest, or motivate an apparatus that has, in addition to the elements recited in the claims upon which claim 34 depends, the use of a fluorescent light source in addition to a pair of arrays of LEDs, and in the manner claimed. As such, claim 34 is patentable over Lippman both because of its dependence on claim 33, and because of the recitations of claim 34.

Claims 21-23 were rejected under 35 USC 103(a) as being unpatentable over Lippmann (US5695269) in view of Mosier. The applicant disagrees as claims 21-23 are patentable because of their dependence on claim 7, and the cited references, taken individually or in combination, do not teach, suggest, or motivate all the recitations of any of the claims.

Claim 21 recites in part: "the filters are adapted for NVIS-B goggles letting a small amount of red light through." Neither Lippman nor Mosier teaches, suggests, or motivates the use of a filter that filters infra-red light but not all red light. As such, combining Lippman and Mosier does not teach, suggest, or motivate the combination claimed in claim 21 and claim 21 is patentable over the cited references.


Claim 22 recites in part: "each light emitting diode array of the pair of light emitting diode arrays includes both red and non-red light emitting diodes, and the apparatus further comprises a switch coupled to the light emitting diode arrays in such a manner that the switch is operable to cause the red light emitting diodes of both of the light emitting diode arrays to switch on or off without causing the non-red light emitting diodes of either of the light emitting diode arrays to switch on or off." Neither of the cited references teach, suggest, or motivate a switch operable to turn on or off red LEDs in each of a pair of LED arrays without turning on or off non-red LEDs of the LED arrays. As such, claim 22 is patentable over the cited references.

Claim 23 recites in part: "the switch is coupled to the light emitting diode arrays in such a manner that the switch is also operable to cause a group of the non-red light emitting diodes that emit blue or green light to switch on or off." Neither of the cited references teach, suggest, or motivate a switch operable, in addition to turning on or off only red LEDs, turning on or off non-red LEDs. As such, claim 23 is patentable over the cited references.

It is believed that the case is now in condition for allowance, and an early notification of the same is requested. If the Examiner believes that a telephone interview will help further the prosecution of this case, he is respectfully requested to contact the undersigned attorney at the listed telephone number.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on December 28, 2004

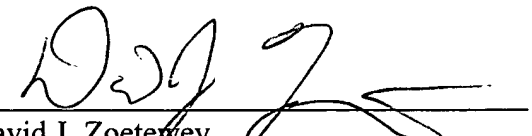
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Signature

Dated: December 28, 2004

Very truly yours,

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